

01.

(25 marks)

- (a) "In the smartphone era mobile phones started using styluses for input." Briefly explain what a **stylus** is and how it facilitates input.

(4 marks)

A stylus is a pen-like tool used to interact with touchscreens.

It allows precise input by simulating a fingertip.

It allows electing small UI elements more accurately than fingers.

It is especially useful for handwriting and sketching taks on mobile devices.

- (b) Name **four (04)** examples for mobile application frameworks.

(4 marks)

. *Windows Mobile, Web. Flutter etc. are valid] L1 slide 27*

- (c) Briefly explain the need of a **mobile strategy** when initiating a mobile application project.

(5 marks)

Mobile Strategy– How much time, effort, and money it will cost when implementing mobile software products (apps) for a specific context?– Early and wrong judgements based on looking at the breadth could entirely ruin the value in the long run.– Formulating a proper strategy reduces the chances of massive failures.– This section provides certain rules one can adhere to when developing a mobile strategy.] L1 Slide 31

- (d) Write a brief note of **one (01) mobile operating system** that you know of **with four (04)** points such as:

Name, Manufacturer, Source type and Popularity

(4 marks)

The Android operating system is the most popular operating system today. It is based on the Linux Kernel and open-source software. The android operating system was developed by Google.] L2 slide 6.

- (e) Write a description of **two (02) layers of Android Platform Architecture**, describing their relative positions and functions in Android's layered architecture.

(8 marks)

explanation description given in L2 slide 16 and above.

02.

(25 marks)

(a) Name **five (05)** of the **elements** of the Mobile Design (in any order).

(5 marks)

Context, Message, Look and feel, Layout, Colour, Typography, Graphics (any 5) L3- slide 4

(b) For **any three (03)** of the above mentioned elements in **Question 02. a)**, write a short note to describe them.

(6 marks)

Context - The environment, circumstances, and conditions surrounding users when they interact with a mobile app or website

Message - Message is the overall impression you create through visual design—(In mobile design, the opportunities for branding are limited, but the need for messaging is great),

Look and feel - Look and feel refers to the appearance and style of a design(It can be used to describe how a design looks and feels to users, such as being clean, modern, or usable; Look and feel can be a subjective and challenging concept to define in the context of mobile design, as it involves both visual and tactile elements— Look and feel can have a significant impact on user experience, influencing how users interact with the design and the emotional response it generates)

Layout - Layout plays a crucial role in how users perceive and process the content on screen—(It can affect readability, hierarchy, and overall user experience)

Colour - Color is crucial in mobile design— Mobile screens were once limited to black and white, but we now have nearly the entire spectrum of colors to choose from— Color depth is an important factor to consider when designing for different mobile devices

Typography - Typography is the technique of arranging type to make written language legible, readable and appealing when displayed—(Earlier, designers were limited to using only one typeface on mobile devices— Higher-resolution screens have allowed for a more robust catalog of fonts than just the device font— Typography plays a crucial role in the legibility and overall visual appeal of mobile design)

Graphics - Graphics are used to establish or aid a visual experience in mobile design— Graphics can supplement the look and feel or be displayed as content inline with the text— Iconography is the most common form of graphics used in mobile design to communicate ideas and actions to users in a constrained visual space— The challenge is to ensure that the meaning of the icon is clear to the user) (any 3) L3- slides (4 to 57)

- (c) What is meant by a “**best practice**” in mobile design? Why would a designer **may avoid** adhering to a particular best practice in their mobile design?

(6 marks)

A Best practice refers to an approach of design that has been used by successful past designs and agreed upon by a community/group. Also sometimes referred to as a rule of thumb.

Although it is recommendable in general it does not mean that the best practice can always be adhered to and the designer has no authority to bend the rules. Under the specific circumstances of the design the designer may decide to deviate from the best practice or abandon it.

(d) What is **Figma**? Write a short note with up to **five (05)** points to describe it.

(5 marks)

Figma is a digital design and prototyping tool + It helps designer UI and UX design by computer aid.+ Figma is a vector design tool +

It runs on the browser + It allows to iterate on designs, create prototypes, and get feedback at any stage of the design process + Figma allows real-time collaboration on the same file

(e) Briefly explain what is meant by “**user-centric experiences**” in mobile design.

(3 marks)

Successful mobile designs put the user at the center of the experience (understanding user needs, preferences, and behaviors)– Doing this, designers can create solutions that provide value to the user and enhance the overall user experience

03.

(25 marks)

(a) Select **three (03)** of the following **four (04)** aspects, briefly explain why Android application development becomes a challenge.

- i. Multiple screen sizes and resolutions
- ii. Performance
- iii. Security
- iv. Compatibility

(6 marks)

Challenges of Android development • Multiple screen sizes and resolutions • Performance: make your apps responsive and smooth • Security: keep source code and user data safe • Compatibility: run well on older platform versions (any 3) L4- slide 13

(b) Briefly explain the **problem of ANR** that occurs in Android runtime.

(3 marks)

If the UI waits too long for an operation to finish, it becomes unresponsive • The framework shows an Application Not Responding (ANR) dialog in the UI L3- slide 94

- (c) Draw a transition diagram for an Activity in the android platform.

You must clearly indicate the following to obtain the full marks.

Starting state, Ending state, Intermediate states, Arrows for transition, Callback methods invoked between the transitions. **(16 marks)**

L4- slide 46

04.

(25 marks)

(a) Write short notes to the following questions on Android architecture components.

(i) ViewModel

(3 marks)

ViewModel : View models are objects that provide data for UI components and survive configuration changes. • You can also use a ViewModel to share data between fragments • Part of the lifecycle library] L5 - Slide 8

(ii) DataRepository

(3 marks)

ViewModel asks repository for data. Use a repository to do the work to get the data • Hand it over to the requester (i.e.: ViewModel)] L5 - Slide 11

(iii) Entity in Room library

(3 marks)

*Entity instance = row in a database table • Define entities as POJO classes
• 1 instance = 1 row • Member variable = column name*

(iv) Dao in Room library

(3 marks)

Use data access objects, or DAOs, to access app data using the Room persistence library • DAO methods provide abstract access to the app's database • The data source for these methods are entity objects • DAO must be interface or abstract class • Room uses DAO to create a clean API for your code] L5 -slide 23

(v) Database in Room library

(3 marks)

database holder. Used to create or connect to database

(vi) Singleton instance of an object

(3 marks)

a singleton instance is an object that is initialized only once and forced to avoid creating duplicate instances of itself.

(b) Name **three (03)** strategies to release an Android consumer mobile application to users.

(3 marks)

A market place such as google playstore - On your own website for download. - by directly sending it to the user] L6 - Slide 9

(c) Name **four (04) monetization strategies** for an app based on Android.

(4 marks)

Free and Paid App Versions Model– Free App with In-app Purchases Model– Free App with Subscription Model– Paid App Model– Partnership Model, Ad mob] L6 - Slide 40
